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16 UNITED STATES DISTRICT COURT
17 NORTHERN DISTRICT OF CALIFORNIA
18 SAN FRANCISCO DIVISION

19 WAYMO LLC,
20 Plaintiff,
21 v.
22 UBER TECHNOLOGIES, INC.,
23 OTTOMOTTO LLC; OTTO TRUCKING LLC,
24 Defendants.

Case No. 3:17-cv-00939-WHA

**DEFENDANTS UBER
TECHNOLOGIES, INC., OTTOMOTTO
LLC, AND OTTO TRUCKING LLC'S
RESPONSES TO COURT-ORDERED
INTERROGATORIES TO ASSIST
COURT IN SUPERVISING CASE
MANAGEMENT AND EXPEDITED
DISCOVERY**

Trial Date: October 2, 2017

26 **REDACTED VERSION OF DOCUMENT FILED UNDER SEAL**
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1 **COURT INTERROGATORY NO. 1:**

2 Identify by name and position each present and former officer, director, or employee of
3 defendant Uber Technologies, Inc. (including attorneys), who received prior to the acquisition of
4 Ottomotto LLC and Otto Trucking LLC any electronic or paper material or communication
5 regarding LiDAR or any aspect thereof from:

6 (i) Anthony Levandowski or his representatives, or

7 (ii) Anyone else advising that the material came from Anthony Levandowski or his
8 representatives.

9 Any name or communication already disclosed on a privilege log may be omitted.

10 **DEFENDANTS' RESPONSE TO COURT INTERROGATORY NO. 1:**

11 Uber Technologies, Inc. ("Uber") and Ottomotto LLC ("Otto") set forth their response in
12 Exhibit A.

13 Otto Trucking LLC has not been acquired by Uber Technologies, Inc. and remains a
14 distinct legal entity. Otto Trucking has no independent knowledge of the contents of Exhibit A
15 beyond Uber and Otto's disclosure.

16 **COURT INTERROGATORY NO. 2:**

17 For each such person, identify and describe the material or communication received with
18 sufficient detail to establish any privilege from production, or simply produce the material or
19 communication received to plaintiff's counsel by **APRIL 25**.

20 Any name or communication already disclosed on a privilege log may be omitted.

21 **DEFENDANTS' RESPONSE TO COURT INTERROGATORY NO. 2:**

22 Uber and Otto respond as follows:

23 The numbers in this response correspond to the names in Exhibit A.

24 1. Discussions regarding potentially providing LiDAR hardware for Uber;
25 discussions in connection with acquisition of OttoMotto and Otto Trucking

26 2. Discussions regarding potentially providing LiDAR hardware for Uber

27 3. See UBER00011972 - UBER00011981, UBER00011989 - UBER00011998,
28 UBER00012004 - UBER00012006.

- 1 4. See UBER00011982 - UBER00011988, UBER00012031.
- 2 5. Discussions regarding whether to purchase Velodyne LiDARs. See also
- 3 UBER00011972 - UBER00011981.
- 4 6. See UBER00011972 - UBER00011981.
- 5 7. See UBER00011972 - UBER00011981, UBER00011989.
- 6 8. Discussions regarding whether to purchase Velodyne LiDARs. See also
- 7 UBER00011972 - UBER00011981.
- 8 9. See UBER00011972 - UBER00011988, UBER00011992 - UBER00012003,
- 9 UBER00012007 - UBER00012039.
- 10 10. See UBER00011972 - UBER00011981.
- 11 11. See UBER00011972 - UBER00011981.
- 12 12. Discussions regarding whether to purchase Velodyne LiDARs.
- 13 13. Discussions regarding how LiDAR works.
- 14 14. May have had discussions about Uber's requirements for LiDAR.
- 15 15. May have discussed reliance on LiDAR versus camera.
- 16 16. May have discussed labeling LiDAR data or spurious points. See also
- 17 UBER00012030 - UBER00012039.
- 18 17. Present when Anthony Levandowski and Drew Bagnell discussed background
- 19 subtraction and the possibility of changing the laser firing order to eliminate spurious points.
- 20 18. Presented to Mr. Levandowski and others about Uber's LiDAR simulation efforts
- 21 (creating fake LiDAR points for simulation purposes).
- 22 19. Presented with Mr. Liemhetchara.
- 23 20. Presented to Mr. Levandowski and others about how Uber does mapping. LiDAR
- 24 would only have come up in the context of how LiDAR returns are used to localize the vehicle.
- 25 21. When discussing radar, Mr. Levandowski used LiDAR as an example to back up
- 26 his position about where to locate radar sensors on a car
- 27 22. Very brief chit-chat regarding general LiDAR technology
- 28 23. Discussions regarding how LiDAR works

1 24. Discussions regarding mapping vehicles and what kinds of LiDAR data was being
2 collected and was available

3 25. Discussions regarding how LiDAR works and why LiDAR is important;
4 discussions in connection with acquisition of OttoMotto and Otto Trucking

5 26. Discussions about how the Velodyne was returning spurious points during road
6 testing

7 27. See UBER00012004 - UBER00012006.

8 Otto Trucking LLC has not been acquired by Uber Technologies, Inc. and remains a
9 distinct legal entity. Otto Trucking has no independent knowledge of the contents of Exhibit A or
10 their response to this Interrogatory beyond Uber and Otto's disclosure above.

11 **COURT INTERROGATORY NO. 3:**

12 Identify and describe in approximate chronological sequence all LiDAR-related work
13 Anthony Levandowski has done since leaving Waymo, including whether or not that work led to
14 or related to any prototype or device, and describe how and where that work is reflected.

15 **DEFENDANTS' RESPONSE TO COURT INTERROGATORY NO. 3:**

16 Immediately after leaving Google, Anthony Levandowski began working at the entity that
17 ultimately became Otto. His primary responsibilities involved management of the new startup
18 company. Otto's first concept for an optical scanner that could have potentially been used for
19 LiDAR applications was [REDACTED].

20 Mr. Levandowski was not a LiDAR engineer, but contributed some high-level ideas to the
21 concept. He made some rough sketches of potential designs, which contemplated the use of off
22 the shelf parts (i.e., lens, lens mount, optical breadboard) and worked on some of the math
23 relating to potential beams (points per second), but never created any Computer-Aided Design
24 (CAD) files. He also approved purchases of commercially available parts for tools and may have
25 suggested a commercially available motor that could be used to spin the mirrors. This concept
26 never progressed past the early stages of design before it was abandoned. Although a few
27 components for this concept may have been built by other engineers at Otto, this concept could
28 not be used for LiDAR applications because it did not include many of the components necessary

1 for a LiDAR sensor (e.g., a pulsed light source, timing circuitry, a receiver, etc.). In
2 February 2016, Mr. Levandowski and Mr. Dan Gruver attended Photonics West and met with
3 vendors including Princeton Light Wave, Kyopsys, O-Net, and Nalux to discuss LiDAR.

4 Around May 2016, Otto began operating out of its 737 Harrison Street location in
5 San Francisco, California. During this time frame, Mr. Levandowski continued to be primarily
6 involved in management of the company but also did a lot of cheerleading on the sidelines, asked
7 for progress reports from his engineers, and encouraged the team to focus on developing a
8 LiDAR prototype.

9 In April 2016, while Otto was being considered as a potential LiDAR hardware supplier
10 for Uber, Mr. Levandowski met with Mr. Scott Boehmke (an engineering manager at Uber) to
11 discuss Uber's requirements for a potential custom LiDAR sensor. Mr. Levandowski also
12 introduced Mr. Boehmke to several engineers at Otto.

13 In May 2016, Mr. Boehmke met with Mr. Levandowski and discussed a potential LiDAR
14 concept that included 8 cavities and 8 fiber lasers, split into 4, 6, or 8 beams to create 32, 48, or
15 64 channels, respectively. This concept later evolved into a project that was code-named
16 "Spider." Mr. Levandowski did not provide the beam spacing or angles for Spider, but instead
17 asked Mr. Boehmke, as the customer, to provide Uber's desired beam parameters, which were
18 ultimately used as starting requirements for Spider.

19 The Spider design incorporated concepts from a pre-existing fiber laser design called
20 "Owl" that had previously been developed by a company called Tyto, which Otto acquired in
21 May 2016. Again, although Mr. Levandowski was not a LiDAR engineer, he brainstormed a few
22 rough sketches of possible optical layouts for Spider with Gaetan Pennecot. Mr. Pennecot
23 designed around those rough sketches and used them as a starting point for designing the lenses
24 for Spider. Mr. Levandowski neither created any CAD files, nor conducted any in-depth analysis
25 or calculations for Spider. He asked for periodic status updates on the Spider project, approved
26 purchases for parts, and provided occasional feedback on the design. Most of his involvement
27 consisted of encouraging the team to quickly assemble a prototype that could be tested on a truck.
28 Despite that encouragement, Otto never completed a prototype of the Spider design.

1 On August 23, 2016, Otto was acquired by Uber. After the acquisition, Mr. Levandowski
2 became the head of the Advanced Technology Group at Uber, which consolidated the
3 pre-existing Advanced Technology Center at Uber with the newly acquired Otto team. At this
4 time, Mr. Levandowski assumed responsibility over a substantially larger group and became
5 much more focused on management duties. Mr. Levandowski does not provide input on detailed
6 technical LiDAR design choices at Uber.

7 By October 2016, it was brought to Mr. Levandowski's attention that some Otto engineers
8 did not believe in the viability of Spider. This was initially brought to his attention by Mr. Eric
9 Meyhofer, who is in charge of the LiDAR hardware team. When Mr. Meyhofer, Mr. Boehmke,
10 Mr. James Haslim (an engineering manager at Uber) and other LiDAR engineers determined that
11 "Spider" was not a technically viable design and that Uber needed to pivot to a new LiDAR
12 design, Mr. Levandowski deferred to their judgment and assented to their recommendation to
13 pursue a very different, diode-based, bistatic LiDAR design, which later become the project that
14 was code-named "Fuji."

15 Mr. Levandowski has on occasion attended weekly status update meetings for the LiDAR
16 team, which includes updates on Fuji, but generally does not attend such meetings and does not
17 provide any detailed technical design input. Moreover, Mr. Levandowski did not provide any
18 design input for the number of boards in the transmit block, configuration of the boards in the
19 transmit block, number of laser diodes on each transmit PCB, number of optical cavities, number
20 of channels, beam parameters, positioning of the laser diodes with respect to the edge of the PCB
21 or on bond pads, the use of guide holes, the location and orientation of the laser diodes on the
22 transmit PCBs, the manufacturing or alignment of FAC lenses, or methods of spacing.

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1 Otto Trucking LLC has not been acquired by Uber Technologies, Inc. and remains a
2 distinct legal entity. Otto Trucking has no independent knowledge of the contents of Exhibit A or
3 their response to this Interrogatory beyond Uber and Otto's disclosure above.

4 Dated: April 25, 2017

MORRISON & FOERSTER LLP

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6 By: /s/ Arturo J. González
ARTURO J. GONZÁLEZ

7 Attorneys for Defendants
8 UBER TECHNOLOGIES, INC.,
9 OTTOMOTTO LLC, and OTTO TRUCKING LLC
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VERIFICATION

I, Eric Meyhofer, declare:

1. I am a Director of Engineering for Defendant Uber Technologies, Inc. ("Uber") in the above-captioned action, and I am authorized to execute this verification on behalf of Uber and Ottomotto LLC.

2. I have read Defendants Uber Technologies, Inc., Ottomotto LLC, and Otto Trucking LLC's Responses to Court-Ordered Interrogatories to Assist Court in Supervising Case Management and Expedited Discovery (the "Responses"), and know the contents thereof.

3. I am informed and believe that the matters stated in the Responses are true and correct and, on that ground, allege that the matters stated therein are true and correct.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 25th day of April, 2017, at Pittsburgh, Pennsylvania.



Eric Meyhofer